

## REMARKS

### Claim Objections

Claim 8 is objected by the Examiner because of the following informalities: The claim recited "sending the audio signals to the set of goggles" however logically the video signals would go to the goggles in view of Applicant's specification and claim 5.

Applicant has corrected claim 8 to call for "sending the video signals to the set of goggles."

### 35 U.S.C § 103

The examiner rejected claims 1-4, and 13-15 under 35 U.S.C. 103(a), as being unpatentable over Simmons, US 6,741,911 in view of McIntosh, US 5,103,404. The examiner stated:

(Claim 1 and 13) Simmons describes a virtual reality encounter system and method comprising: A humanoid robot having tactile sensors positioned along the exterior of the robot (column 8, lines 39-50), the sensors sending tactile signals to a communications network (column 7, lines 29-32); and a body suit having tactile actuators (column 6, lines 33-51, column 8, lines 39-50), the actuators receiving the tactile signals from the corresponding tactile sensors on the robot from the communication network (column 7, lines 29-32), wherein the tactile sensors and the corresponding tactile actuators are calibrated in connection with variable sensitivities associated with difference regions of the human (column 8, line 62 – column 9, line 4, column 13, lines 3-28). Further McIntosh teaches that it was well known in the remote robotic control art to calibrate sensors to different levels of sensitivities to overcome the problem and allow, according to McIntosh, individuals to vary the sensitivities of tactile feedback to optimize their own degree of sensitivity and control over the manipulator (column 1, lines 41-50, column 9, lines 12-52).

Claim 1 is allowable over any purported combination of Simmons and McIntosh. As amended, claim 1 is directed to: "a virtual reality encounter system including a humanoid robot having tactile sensors..., the sensors sending tactile signals to a communications network... a body suit ... a gateway device that overlays supplement tactile sensations with stored virtual tactile sensations that are sent to the body suit."

Simmons neither describes nor suggests "a gateway device that overlays supplement tactile sensations with stored virtual tactile sensations that are sent to the body suit." Support for

the subject matter can be found in the originally filed application, for example, at page 8, lines 4-17.

In contrast, Simmons discloses allowing a human operator to perform accurate and real-time control over a robot at a remote site as if the operator were actually there. In this regard, Simmons states:

The current invention allows a human operator to perform delicate or indelicate tasks with great dexterity remotely with broad multiple and synchronized simultaneous sensory iteration as if the user were actually there. This includes the accurate, full-body interactive, real time perceptions and control of weigh, distance, inner ear balance, motion/inertia, speed, pressure, vibration, impact, resistance to action, sound and a true, position responsive visual interface as if his body were actually in the remote location.<sup>1</sup>

Applicant contends that Simmons teaches away from amended claim 1 because Simmons' teaching requires the user to accurately perceive the visual and sensory conditions of a remote environment where the robot is operating as opposed to providing tactile sensations in accordance with a user-defined virtual reality. For example, Simmons elaborates on a scenario in which a surgeon controls a robot at a remote site to perform a surgery on a patient:

In one hand the surgeon feels the texture, stiffness, slipperiness, resistance to squeezing, the pulse as the heart pumps and the weights of the heart just as he feels in the other hand the resistance and vibration of the scalpel as it makes an incision and encounters more resistance as it goes deeper. He appropriately responds to a sudden resistance with just enough additional force to over come the scalpel's resistance but not enough to puncture below or overextend the cut.<sup>2</sup>

Apparently, any modification to Simmons to include providing tactile sensations in accordance with a user-defined virtual reality will inevitably incur a life-threatening situation.

Similarly, McIntosh does not cure the foregoing deficiencies of Simmons. Rather than providing tactile sensations in accordance with a user-defined virtual reality, McIntosh intends to provide accurate and reliable tactile feedback to a human operator because:

Non of the systems are able to provide sensory input to an operator of a remote manipulator which gives in real time, an accurate and reliable, as well as variable, degree of tactile feedback to the operator to enhance the preciseness of his control is often necessary to

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<sup>1</sup> See Simmons at col. 1, lines 36-44.

<sup>2</sup> See Simmons at col. 2, lines 31-38.

avoid overcompensation and undue time required to achieve the desired action of the manipulator.<sup>3</sup>

Accordingly, claim 1 is allowable over Simmons and McIntosh, taken alone or in combination. Claim 13, as amended, is a method claim that contains analogous limitations to claim 1, and is allowable for analogous reasons.

Claims 2-4, and 14-15 are allowable at least for the reasons discussed in claims 1 and 13, respectively.

#### Claim 6

Claim 6 includes the features of "...a second humanoid robot in the second location, the second robot having a second microphone and a second camera; and a second set of goggles to receive the video signals from the first camera and a second earphone to receive the audio signals from the first microphone."

The examiner states:

Simmons does not describes wherein at the location of the operator, a second humanoid robot transmits data to a first location. However, Abbasi teaches this duplication of the same system to create an interaction between remote users is known. Abbasi teaches a remote physical contact system and method wherein a first surrogate (robot) is at a first location, a second surrogate (robot) is at a second location, the second surrogate having the same components, actuators, and sensors, i.e. a second microphone and second camera (figure 1, elements 35B, 40B, and 45B); a second display to receive the video signals from a first camera, a second earphone to receive audio signals from a first microphone (figure 1, elements 25 and figure 6), and a first communication gateway in the first location and a second communication gateway in the second location to create the remote interaction via a network (computer network 30 between computers 15 and 25). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Abbasi with the invention of Simmons, in view of McIntosh and Simmons '397, because as Abbasi teaches the use of remote surrogates and expands the notion by using dual surrogates for teleconferencing or computer communications, adding a capability to engage in all types of physical contact to "provide for the tactile sensation so inherent in many forms of human contact." (Column 1, lines 44-64.) Further the combination of the prior arts would produce a predictable result by merely duplicating the known systems and interchanging the physical locations, as clearly suggested by Abbasi.<sup>4</sup>

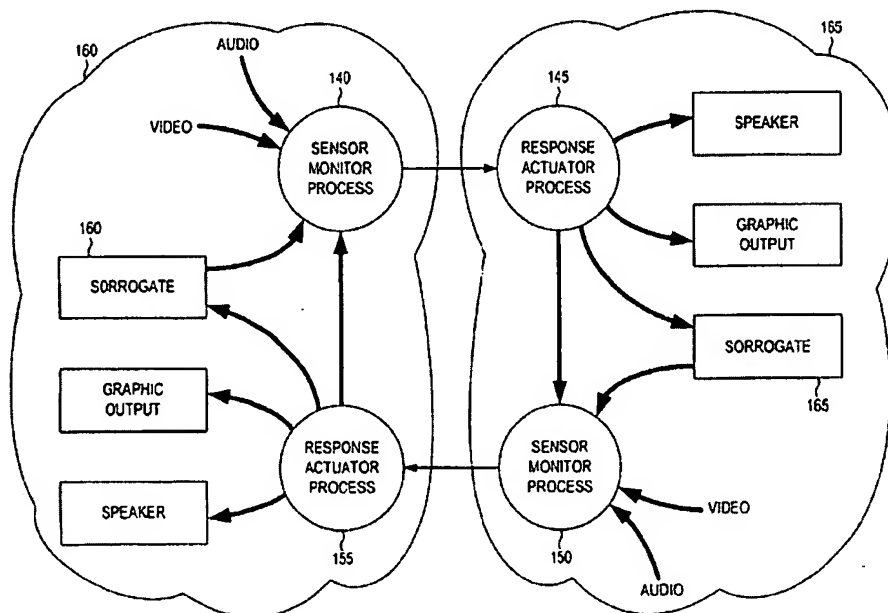
Applicant contends Abbasi does not remedy the foregoing deficiencies of Simmons, McIntosh, Simmons '397 and Yee. In Abbasi, the surrogates at different sites are not integrated with microphones and cameras. Rather, as the examiner recognizes it as well, Abbasi's

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<sup>3</sup> See McIntosh at col. 2, lines 31-40.

<sup>4</sup> Office Action page 7 to 8.

surrogate is designed to add a capability to engage in all types of physical contact. As illustrated in Figure 5 (reproduced below), Abbasi collects video and audio information separately from the surrogate 160.



**FIG. 5**

There is nothing in Abbasi describes or suggests “a second humanoid robot in the second location, the second robot having a second microphone and a second camera; and a second set of goggles to receive the video signals from the first camera and a second earphone to receive the audio signals from the first microphone.” Applicant submits the examiner’s “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in as well as a change in the basic principle under which the construction was designed to operate.” *In re Ratti*, 270 F.2d at 813, 123 USPQ at 352 (CCPA 1959). Claim 6 is allowable over the art.

It is believed that all the rejections and/or objections raised by the examiner have been addressed.

In view of the foregoing, applicant respectfully submits that the application is in condition for allowance and such action is respectfully requested at the examiner's earliest convenience.

All of the dependent claims are patentable for at least the reasons for which the claims on which they depend are patentable.

Canceled claims, if any, have been canceled without prejudice or disclaimer.

Any circumstance in which the applicant has (a) addressed certain comments of the examiner does not mean that the applicant concedes other comments of the examiner, (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims, or (c) amended or canceled a claim does not mean that the applicant concedes any of the examiner's positions with respect to that claim or other claims.

The fee in the amount of \$245.00 for the petition for extension of time is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Apply any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 14202-004001.

Respectfully submitted,

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